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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,687	06/27/2003	Peter R. Richards	P103-US	7692

26148 7590 10/04/2005

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EXAMINER

SHAPIRO, LEONID

ART UNIT PAPER NUMBER

2677

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/607,687	Applicant(s) RICHARDS, PETER R.	
	Examiner Leonid Shapiro	Art Unit 2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-95 is/are pending in the application.
- 4a) Of the above claim(s) 33-95 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-9,12-26,28,29 and 32 is/are rejected.
- 7) ☒ Claim(s) 3,4,10,11,27,30 and 31 is/are objected to.
- 8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) * | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) *
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-32, drawn to mirror plate, classified in class 345, subclass 108.
 - II. Claims 33-95, drawn to projection system, classified in class 359, subclass 197.
2. Inventions of group I-II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention of group I of has separate utility such as detector, which does related to the projection system by group II. See MPEP § 806.05(d).
3. A telephone call was made to Gregory Muir on August 4, 2005 to request an oral election to the above restriction requirement, which resulted in election of Group I.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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1. Claims 1-2, 5-6, 9, 12-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huibers (US Patent No. 6,046,840) in view of Markis (US Patent No. 6,724, 379 B1).

As to claim 1, Huibers teaches a method of operating a micromirror device that comprises a movable mirror plate and an electrode formed on a substrate for driving the mirror plate (See Figs. 3A-3B, items 42, 48, Col. 10, Lines 7-43), the method comprising:

applying a first voltage to the mirror plate and a second voltage to the electrode such that voltage difference between the mirror plate and the electrode drives the mirror plate to rotate relative to the substrate (See Fig. 4, items V_{snap}, V_{release}, Col. 10, Lines 44-64).

Huibers does not disclose applying a third voltage to the mirror plate, and a fourth voltage to the electrode such that the voltage difference between the mirror plate and the electrode drives the mirror plate to rotate relative to the substrate, wherein difference between the third voltage and the fourth voltage has an opposite polarity to that between the first voltage and the second voltage.

Markis teaches applying a third voltage (V1), and a fourth voltage (V2), providing positive and negative half-cycle drive voltages (See Fig. 1c, items V1, V2, Col. 5, Lines 31-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Markis into Huibers system in order to compensate for charge build-up in the device (See Col. 1, Lines 25-30 in the Markis reference).

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As to claims 2, 5, 32 Huibers teaches the first voltage and the second voltage are applied in response to a first subsequence of a sequence of actuation signals (See Fig. 4, items Vsnap, Vrelease, Col. 10, Lines 44-64), and Markis teaches the third voltage and the fourth voltage are applied in response to a second subsequence of the sequence of actuation signals (See Fig. 1c, items V1, V2, Col. 5, Lines 31-40).

As to claims 6, 28-29 Huibers teaches predetermined number of applications of the first voltage and the second voltage are applied (See Fig. 4, items Vsnap, Vrelease, Col. 10, Lines 44-64), and Markis teaches the third voltage and the fourth voltage are applied (See Fig. 1c, items V1, V2, Col. 5, Lines 31-40).

As to claims 9, 12-13, Markis teaches voltages with opposite polarities and zero (See Fig. 1c, items V1, V2, Col. 5, Lines 31-40).

As to claims 14-25, it is generally considered to be within the ordinary skill in the art to adjust, vary, select, or optimize the numeral parameters or values of any system absent a showing of criticality in a particular recited value. The burden of showing criticality is on Applicant. See *in re Mason*, 87 F.2nd 370, 32 USPQ 242 (CCPA 1937). Thus, it would have been obvious to one of ordinary skill in the art to interchange values voltages.

2. Claims 7-8, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huibers and Markis as applied to claim 1 above, and further in view of Nelson (Pub. NO.: US 2004/0190716 A1).

Huibers and Markis do not disclose subsequence of the sequence of the actuation signals has a frequency more than a predetermined frequency, wherein the frequency is defined as the number of actuation signals in the subsequence per second, wherein the critical frequency is determined in accordance with a perceptual ability of human eyes.

Nelson teaches a frequency more than a predetermined frequency, wherein the frequency is defined as the number of actuation signals in the subsequence per second, wherein the critical frequency is determined in accordance with a perceptual ability of human eyes (See paragraph 0045).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Nelson into Markis and Huibers system in order to match a perceptual ability of human eyes.

Allowable Subject Matter

3. Claims 3-4, 10-11, 27, 30-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Relative to claim 3-4 the major difference between the teaching of the prior art of

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record (Huibers and Markis) and the instant invention is that the actuation signal corresponds to an ON state of the micromirror, wherein the ON or OFF state is defined as a state such that the micromirror reflects light into a projection lens for producing a bright pixel of an image on a display target.

Relative to claims 10-11 the major difference between the teaching of the prior art of record (Huibers and Markis) and the instant invention is that the step of applying the third voltage and the fourth voltage further comprises grounding the electrode or the mirror plate.

Relative to claim 27 the major difference between the teaching of the prior art of record (Huibers and Markis) and the instant invention is that the rotation of the mirror platedriven by the voltage difference between the third voltage and the fourth voltage is along a rotation direction that is the same as that of the mirror plate driven by the voltage difference between the first voltage and the second voltage.

Relative to claim 30-31 the major difference between the teaching of the prior art of record (Huibers and Markis) and the instant invention is that the first voltage and the second voltage and the application of the third voltage and the fourth voltage are performed once per time interval determined by a time interval between two consecutive color segments of a color wheel used by the display system in producing a color image or by a wave-segment of a pulse-width-modulation waveform used in producing the grayscale of the image or the video frame.

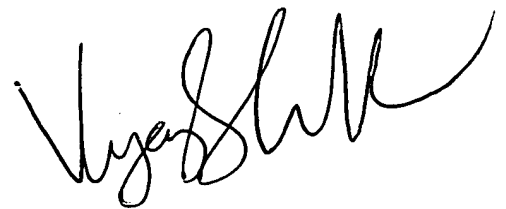
Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LS
08.24.05

A handwritten signature in black ink, appearing to read 'Vijay Shankar', with a stylized, cursive script.

**VIJAY SHANKAR
PRIMARY EXAMINER**